and reaches the following result: The reputed humerus is the interclavicle; the reputed scapula is the humerus; the reputed supra-scapula is the left coracoid; the reputed supra-scapula is the right scapula; the reputed right and left coracoids are the pre-coracoid (epicoracoid) and coracoid of the right side; the reputed clavicles are ribs. Five digits are identified in place of four. The fossil is referred to a new genus —*Aristodesmus*. It is identified as an Anomodont reptile, chiefly on the basis of resemblence to *Procolophon* and *Pareiasaurus*. He also compares it with the *Monotremata*. In conclusion, he argues that the points of structure are so few in which *Monotreme* mammals make a closer approximation to the higher mammals than is seen in his fossil (*Aristodesmus*) and other *Anomodontia*, that the *Monotreme* resemblances to fossil reptiles become increased in importance. He believes that a group *Theropsida* might be made to include *Monotremata* and *Anomodontia*, the principal differences (other than those of the skull) being that *Monotremes* preserve the marsupial bones, the atlas vertebra and certain cranial sutures. *Aristodesmus*, which suggests this link, is at present placed in the *Procolophonia*, a group separated from its recent association with *Pareiasaurus*, and restored to its original independence because it has two occipital condyles [!], with the occipital plate vertical, and without lateral vacuities, and has the shoulder-girdle distinct from *Pareiasauria* in the separate precoracoid extending in advance of the scapula. In the same remarkable communication Seeley discusses, also, the relation of the Labyrinthodont type to the existing Amphibia, and *regards the Labyrinthodont osteology as demonstrating closer relationship with Ichthyosauria and Anomodontia. The group is therefore regarded as reptilian, forming a branchiate division of the class* [*!*]. What are such wild speculations good for?

To conclude I give the synonyms of this reptile.*

Sclerosaurus armatus, H. v. Meyer. Neues Jahrbuch f. Min., 1857, p. 136.

Labyrinthodon Rütimeyeri, Wiedersheim, Abhandl., Schweiz. Pal. Gesellsch. v. 1878, p. 1–56.

Aristodesmus Rütimeyeri (Wiedersheim); Seeley, Ann. Mag. Nat. Hist. (6), Vol. 17, 1896, p. 183.

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Current Notes on Physiography.

McGee on Sheetflood Erosion.

Sheetflood is a term coined by McGee (Bull. Geol. Soc. Amer., VIII., 1897, 87–112) to name the thin sheets of water that occasionally flow over the thinly gravel-covered intermont slopes of the Sonoran district in Arizona and bordering Mexico. It is contrasted with streams, in which a water current is gathered into a channel. Sheetfloods may be a mile or even ten miles wide, yet only a foot or two deep, running rapidly down slopes of one or two hundred feet to a mile; everywhere 'at grade;' that is, their ability to do work everywhere nicely balanced against the work that they have to do. By sheetfloods, not by streams, the peculiar gravel-covered rock floors of the Sonoran district are thought to have been planed down; and the abrupt transition from streams in the mountain gullies to sheetflood on the piedmont surface is taken to explain the equally abrupt transition from mountain to plain; the rocks remaining the same. Unlike the aggraded plains of the Utah, where intermont depressions are heavily filled with mountain waste, the

* *Basileosaurus Freyi* Wiedersheim (Über einen neuen Saurus aus der Trias. Mit einer Tafel. Abh. Schweiz. Pal. Ges., vi., 1879, 4 pp.) from Riehen is too insufficiently described and figured to determine its true position. It is doubtless a reptile, but, according to Wiedersheim, not *Sclerosaurus*.

rock plains of Sonora are only veneered with gravel and sand. At the outlet of mountain ravines McGee pictures and describes triangular, convex 'fans,' which are really carved in solid rock like the plains, and only veneered with alluvium. These must be retreating alluvial fans, in contrast to the advancing alluvial fans ordinarily seen in mountain valleys. After advancing for a time, fans of the latter class are often dissected by streams and thus worn away; but the Sonoran rock-fans seem to have been worn back by sheetflood action, thus preserving their form.

RELIEF MAP OF NEW JERSEY.

A HANDSOME and effective publication of the New Jersey Geological Survey is a new relief map of the State, on a scale of four miles to an inch. It is shaded in gray-brown, as if under northwest illumination, making the relief of the surface only too clear. The map will prove extremely serviceable, but it may be questioned whether a more delicate rendering would not have been more educative, particularly in the schools, where such a map as this must have its greatest and most important use. This is particularly the case in the southern part of the State, where the shading does not seem to be reduced to the delicacy of the faint inequalities in the surface, but where the inequalities of the surface are exaggerated to meet the demands of distinct shading and easy recognition. The effect produced by the southern plains does not tally with that gained on reading the text of the State Survey reports; it is as if the drawing of the relief map were done by a topographer accustomed to exaggerated sections on which an almost imperceptible natural slope becomes a distinct incline, rather than by a geographer who wished to give a just sense of the proportions of hills and plains. The criticisms directed against the vertical exaggeration of geographical models may be equally directed against so forcible a relief map as this. The map is headed with the names of John C. Smock, State Geologist, and C. C. Vermeule, topographer; but no explicit recognition is given to the artist who prepared the map or to the lithographer who printed it.

MORAINES OF THE MISSOURI COTEAU.

A REPORT with the above title by J. E. Todd forms Bulletin 144 of the U. S. Geological Survey. It is chiefly occupied with detailed descriptions of the moraines, from which one may gain a good idea of their importance in determining the relief of the Coteau. A map and many plates, apparently drawn in outline from photographs, afford good illustrations; but it is often difficult to identify localities between text and map. The Blue lake loop, 60 miles southeast of Bismarck, six to ten miles wide, is so rough, with so many stony hills and marshy hollows, as to present a formidable barrier to travel. One may easily lose his way on this undulating surface, where no conspicuous landmarks serve as guides. Many of the moraines are traversed by dry channels that once carried water from the melting ice sheet. The channels are now frequently occupied by small shallow lakes. The Ree hills, 40 miles east of Pierre, chiefly of Cretaceous beds with a veneer of drift, are traversed by an elaborate extinct drainage system; the main channel begins in a gap in the hills, receiving tributaries from either side on its way south, and gaining a depth of 60 to 70 feet with abrupt, stony sides, and a breadth of $\frac{3}{4}$ mile (p. 27).

NOTES.

THE two numbers of Appalachia for 1896 contain several good accounts of mountain ascents in the Canadian and Montana Rockies and in the High Sierra of California. A number of the plates are excellent; that of the Avalanche lake, Montana, being

particularly fine. Narrative, rather than physiography, characterizes the text; but much of the quality of our higher mountains can be gleaned from it. A sad interest attaches to the later pages, in the account of the death of Philip S. Abbot on Mt. Lefroy, Canada. The great precipices of the mountain are shown in a full-page plate.

The physiography of northern Indiana is described by C. R. Dryer (*Inland Educator*, IV., 1897, 63–69) as a contribution towards more rational geography in the schools. The region was first explained by Gilbert in 1870; the drainage is now shown to be even more dependent on morainic ridges than was at first supposed. North of the Maumee-Wabash line the moraines are heavier, enclosing numerous lakes and forming a most picturesque contrast to the flatter surface of the Erie clays around the lake border.

C. Sapper writes upon the physical geography and the geology of Yucatan (Bull. No. 3, Inst. geol. Mexico, 1896). A considerable area is described as of 'very strange topography;' lacking ridges of determinate direction, and everywhere gently undulating; the cause of this being ascribed to the horizontal position and the porous structure of the rocks, and to the 'sinks' consequently formed over subterranean channels. The same author describes the volcanoes of Salvador and southeast Guatemala (Petermann's Mitt., XLIII., 1897, 1–7). The volcano Guazapa is well dissected by radical valleys, while nearly all the others are young enough to have smooth contours.

John Murray, of the Challenger expedition, gives an account of 'Balfour shoal' (*Scot. Geogr. Mag.*, XIII., 1897, 120–134, two plates), probably a volcanic cone, rising from the Pacific bottom, east of Australia, in Lat. 19° S., Long. 157° E., from a depth of 1,300 fathoms to 836 fathoms. The side slopes are steepest on the northeast, where they reach 200 fathoms per mile, or 1 in 4.4. Examples of other oceanic cones may be found in a paper by G. W. Littlehales, entitled 'Average form of isolated submarine peaks,' published by our Hydrographic Office in 1890.

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CURRENT NOTES ON ANTHROPOLOGY.

THE MONOLITHS OF TAFI.

Tafi is the name of a broad valley in the province of Tucuman, Argentine Republic. The well-known scientist, Professor Ambrosetti, in a recent visit there, had his attention called to an extraordinary collocation of monolithic pillars and stone enclosures, erected in remote ages by the native inhabitants. He describes them in *Globus*, Bd. LXXI., No. 11. The monoliths are from six to ten feet in height above the soil, some plain, others decorated with conventional designs, others rudely chipped into the likeness of faces, etc. They extend over a considerable area and their purpose is problematical.

Ambrosetti is inclined to attribute them to the predecessors of the Calchaqui Indians, who occupied this territory at the Conquest. He suggests that they are the work of the same people who erected the buildings of Tiahuanuco; a suggestion which I think is extremely probable, for some of the decoration shown in his cuts is strikingly like that on the stone pillars of Hatuncolla, two leagues from Lake Titicaca, portrayed in Squier's 'Peru,' pp. 385–6.

ETHNOGRAPHY OF THE MYCENEANS.

In the excellent volume on Mycenean art from the pens of Professors Tsountas and Manatt there is a chapter devoted to the ethnic affiliations of the peoples who, some two milleniums before the Christian era, developed that remarkable culture.

Their tombs, dwellings and arts point to